

### Remarks

Claims 1-31 were pending in the application. Claims 1-15 were rejected. Claims 16-31 were withdrawn. No claims were merely objected to and no claims were allowed. Presently, no claims are canceled, no claims are amended, and no claims are added. No new matter is presented.

#### Claim Rejections-35 U.S.C. 102

Claims 1, 3-6, and 15 were rejected as being anticipated by Hass et al. (WO03/028428). Applicants respectfully traverse the rejection.

Haas et al. merely identifies coating deposition for thermal barrier coatings (TBCs), namely the bondcoat. Page 21, lines 3&4. The deposition is distinguished from the "underlying material". Page 1, lines 30-31. Haas et al. identifies applying the coating to a substrate 320. However, Haas et al. does not identify using its deposition to replace material lost from the substrate. The Office action incorrectly cites page 9, lines 31&32.

The repair of the cited page 9, line 31&32 is distinguishable. This passage merely identifies that the deposition may be used to locally restore the coating on a large airfoil that is being repaired. However, the repair of the substrate of that airfoil is not performed with the Haas et al. method and apparatus. For example, the repair may be a well-known local weld repair over which the coating is being locally applied. Haas et al does not suggest substrate repair be performed by its deposition.

Page 21, lines 1-3 was cited for the modulation. This passage merely reads: "By employing plasma enhancement, multisource crucibles and process condition control, the morphology, composition and grain size of deposited layers are controlled." No modulation of the claim 1 potential or the claim 6 ionization is disclosed or suggested, let alone the particular modulations of claim 3-6. Regarding claims 3-6, the Office action merely contained the conclusory and insufficient statement: "Regarding claims 3-6, these limitations are disclosed by Hass, such as heating and modulating (page 16, lines 12 "periodically altering [sic] voltage)." Office action, page 3, lines 2&3. However, this passage of Haas et al. instead says that the bias generator "allows for generation of a positive, a negative or a periodically alternating voltage..." Such an alternating voltage does not imply modulation. Variants of the term "modulate" are not found in Haas et al. No modulation function is apparent.

Regarding claim 15, Haas et al merely casts a broad net of “0.1 to about 32,350 Pa” but actually suggests: “Typical operating pressures are approximately in the 0.05 to 0.5 Torr range...” Page 5, line 32 and page 10, line 1. Clearly there is no anticipation. For the lowest end of the broadest range to be off by an order of magnitude says that something else is clearly going on and teaches away from the subject matter of claim 15.

Claim Rejections-35 U.S.C. 103

Claims 2 and 7-12 were rejected under 35 U.S.C 103(a) as being unpatentable over Hass et al. in view of Neal et al. (US2002/0076573). Applicants respectfully traverse the rejection.

Neal et al. involves a more analogous goal of substrate restoration and should be treated as the primary reference in such a rejection. Being directed to coating, rather than substrate resotation, Haas et al. is improper as a primary reference and patently insufficient as a secondary reference.

There would be no motivation for the articulated combination. Regarding the basic combination as applies to claims 2 and 16. The Office action merely contained the conclusory and insufficient statement: “... it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the process of Hass wherein the turbine blade is a Ti alloy and the repair material is Ti-based, in light of the teachings of Neal, in order to efficiently repair titanium superalloy turbine blades.” Office action, page 3. This was not a goal of Haas et al. Presumably, if it was, Haas et al would have adopted the Neal et al. teaching wholesale (e.g., first using the Neal et al. method to repair the substrate and then using the Haas et al. method to apply a coating over the repaired area). Haas et al., instead, had the goal of depositing a bondcoat and there is no motivation to seek variance based upon Neal et al. Furthermore, there would not be expectation of improvement over Neal et al. to attempt the substitution of Haas et al. apparatus and method elements.

As noted above, the impropriety of the combination can better be seen with Neal et al as the primary reference. There is clearly no suggestion to modify Neal et al. based upon Haas et al.

Additionally, the combination fails to cure the insufficiencies of the anticipation rejections of the underlying claims.

The rejections of the remaining claims merely further bootstrapped upon the insufficient basic combination. Due to the deficiency of the basic combination and deficiencies of the

underlying anticipation rejection (e.g., no suggestion to optimize a modulation parameter where there is no disclosure or suggestion to modulate at all) these rejections are clearly overcome.

Claims 13 and 14 were rejected under 35 U.S.C 103(a) as being unpatentable over Hass et al. and Neal et al. in view of Carl, Jr. et al. (US6754955). Applicants respectfully traverse the rejection.

The copper chill plate of Carl, Jr. et al. was asserted as being the presently-claimed backing element. However, there is no teaching that this plate is applied to the component or that the material builds up on the base surface and this component. FIG. 4 of Carl, Jr. et al. clearly shows this component spaced apart from the weld build-up material 30. This does not appear to be an exploded view because the surface 32 is shown as irregular whereas the adjacent surface of the chill plate 26 is clearly straight (in section). The chill plate may, for example, be positioned to block adjacent airfoils from splatter.

Furthermore, there is no suggestion for the combination. The conclusory "to repair the tip of a turbine blade" is not sufficient. There is no suggestion that there is a deficiency for which Carl, Jr. et al. provides a cure.

The rejection also suffers the deficiencies of the underlying rejections based upon Haas et al. and the Haas et al. and Neal et al. combination.

#### The Response to Arguments Section

Oddly, the Response to Arguments section at ¶6 on page 5 of the Office action reads: "Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection. see the new Office action." However, there does not appear to be a new ground of rejection. Relative to the prior Office action, the present Office action had the slightest elaboration (e.g., identifying reference numeral 320 of Haas et al. as the substrate and citing the "alternating voltage" as the modulation). Applicants' basic arguments have not been addressed at all. For example:

the barrier coating application versus substrate repair/restoration issues  
regarding Haas et al.;

the improprieties these distinctions raise relative to the combination with  
Neal et al.;

the distinction between the Carl, Jr. et al. chill plate and the claimed backing material.

In view of the insufficient addressing of the argument, Applicants request issuance of a new non-final action. In particular, if there is a new ground of rejection, Applicants are entitled to appropriate flexibility to respond.

Accordingly, Applicants submit that claims 1-31 are in condition for allowance. Please charge any fees or deficiency or credit any overpayment to our Deposit Account of record.

Respectfully submitted,

By /William B. Slate #37238/  
William B. Slate  
Attorney for Applicants  
Reg. No.: 37,238

Telephone: 203-777-6628  
Telefax: 203-865-0297

Date: July 2, 2007